

Amendment

U.S. Patent Application No. 09/922,815

which a log ratio of (111):(100) center peak intensities of greater than about -2.0, in the substantial absence of (100) textural bands.

29. (Amended) The sputtering target of claim 28 having an average grain size of from about 25 to about 50 microns.

B2 30. (Amended) The sputtering target of claim 28 having a ratio of (111):(100) center peak intensities of greater than about 0.

B3 32. (Amended) The sputtering target of claim 28, wherein said metal has purity of at least 99.995% tantalum.

33. (Amended) The sputtering target of claim 28, wherein said metal has a purity of 99.999% tantalum.

34. (Amended) The sputtering target of claim 28, wherein said metal is fully recrystallized.

35. (Amended) The sputtering target of claim 32, wherein said metal is fully recrystallized.

36. (Amended) The sputtering target of claim 33, wherein said metal is fully recrystallized.

37. (Amended) The sputtering target of claim 28, wherein about 80% or more of said metal is fully recrystallized.

B4 39. (Amended) The sputtering target of claim 28, wherein said log ratio is from about 0 to about 15.

B5 66. (Amended) The tantalum metal of claim 1, wherein the tantalum metal has an average grain size of from about 25 to about 75.

B6 83. (Amended) Tantalum metal having a purity of at least about 99.995%, an average grain size of about 150 microns or less, and having a uniform primary (111) texture through the thickness of the tantalum metal.

B7 98. (Amended) Tantalum metal having an average grain size of about 75 microns or less, and having 50 ppm or less metallic impurities.

B8 105. (Amended) The tantalum metal of claim 98, where said average grain size is from about 25 to about 75 microns.

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B9 111. (Amended) The tantalum metal of claim 110, wherein said center peak intensity is from about 0 random to less than about 15 random.

112. (Amended) The tantalum metal of claim 110, wherein said center peak intensity is from about 0 to about 10 random.

113. (Amended) The tantalum metal of claim 110, wherein said log ratio is from greater than about 0 to about 15.

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C3 114. (Amended) The ~~tantalum metal~~ of claim 110, wherein said log ratio is from about 11.5 to about 7.0.

115. (Amended) The tantalum metal of claim 110, wherein said center peak intensity is from about 0 random to less than about 15 random, and said log ratio is from greater than about -4.0 to about 15.

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C4 Please add the following new claims.

B10 120. A tantalum sputtering component comprising an average grain size of about 150 microns or less and a uniform texture of primary (111) throughout a thickness of the component.

121. The tantalum sputtering component of claim 120, wherein said tantalum sputtering component is a sputtering target.

122. The tantalum sputtering component of claim 120, wherein said tantalum sputtering component has 50 ppm or less metallic impurities.

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C5 123. The tantalum sputtering component of claim 120, further having 50 ppm or less O₂, 25 ppm or less N₂, or 25 ppm or less carbon, or combinations thereof.

124. The tantalum sputtering component of claim 120, having 10 ppm or less metallic impurities.

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C6 125. The tantalum sputtering component of claim 120, further having 50 ppm or less O₂, 25 ppm or less N₂, or 25 ppm or less carbon, or combinations thereof.

126. A sputtered deposited film of tantalum produced by the sputtering component of claim 120.

127. The tantalum sputtering component of claim 120, wherein said average grain size is about 100 microns or less.

128. The tantalum sputtering component of claim 127, wherein said tantalum sputtering component is a sputtering target.

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129. The tantalum sputtering component of claim 120, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.50% tantalum.

130. The tantalum sputtering component of claim 120, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.99% tantalum.

131. The tantalum sputtering component of claim 120, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.995% tantalum.

132. The tantalum sputtering component of claim 120, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.999% tantalum.

133. The tantalum sputtering component of claim 120, wherein said tantalum sputtering component is fully recrystallized.

134. The tantalum sputtering component of claim 120, wherein said tantalum sputtering component is at least partially recrystallized.

135. The tantalum sputtering component of claim 120, wherein about 98% or more of said tantalum sputtering component is recrystallized.

136. The tantalum sputtering component of claim 120, wherein about 80% or more of said tantalum sputtering component is recrystallized.

137. The tantalum sputtering component of claim 120 having a purity of from 99.995% to about 99.999%.

138. The tantalum sputtering component of claim 120, wherein said average grain size is about 50 microns or less.

139. The tantalum sputtering component of claim 120, wherein said average grain size is from about 25 to about 150 microns.

140. The tantalum sputtering component of claim 127, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.50% tantalum.

141. The tantalum sputtering component of claim 127, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.99% tantalum.

142. The tantalum sputtering component of claim 127, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.995% tantalum.

143. The tantalum sputtering component of claim 127, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.999% tantalum.

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144. The tantalum sputtering component of claim 120, wherein said average grain size is about 125 microns or less.

145. The tantalum sputtering component of claim 120, wherein said tantalum sputtering component is fully recrystallized.

146. The tantalum sputtering component of claim 120, wherein said tantalum sputtering component is at least partially recrystallized.

147. The tantalum sputtering component of claim 127, wherein about 98% or more of said tantalum sputtering component is recrystallized.

148. The tantalum sputtering component of claim 127, wherein about 80% or more of said tantalum sputtering component is recrystallized.

149. The tantalum sputtering component of claim 127 having a purity of from 99.995% to about 99.999%.

827 150. A tantalum sputtering component comprising a uniform texture of primary (111) throughout a thickness of the component.

151. The tantalum sputtering component of claim 150, wherein said tantalum sputtering component is a sputtering target.

152. A sputtered deposited film of tantalum produced by a sputtering component of claim 150.

153. The tantalum sputtering component of claim 150, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.50% tantalum.

154. The tantalum sputtering component of claim 150, wherein said tantalum sputtering comprises tantalum having a purity of at least 99.99% tantalum.

155. The tantalum sputtering component of claim 150, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.995% tantalum.

156. The tantalum sputtering component of claim 150, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.999% tantalum.

157. The tantalum sputtering component of claim 150, wherein said tantalum sputtering component is fully recrystallized.

158. A tantalum sputtering component comprising an average grain size of about 75

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microns or less and a uniform texture of mixed (111) throughout its thickness, which is substantially void of (100) ~~textural~~ bands.

159. The tantalum sputtering component of claim 158, wherein said tantalum sputtering component is a sputtering target.

160. The tantalum sputtering component of claim 158, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.50% tantalum.

161. The tantalum sputtering component of claim 158, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.99% tantalum.

162. The tantalum sputtering component of claim 158, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.995% tantalum.

163. The tantalum sputtering component of claim 158, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.999% tantalum.

164. The tantalum sputtering component of claim 158, wherein said tantalum sputtering component is fully recrystallized.

165. The tantalum sputtering component of claim 158, wherein said tantalum sputtering component is at least partially recrystallized.

166. The tantalum sputtering component of claim 158, wherein about 98% or more of said tantalum sputtering component is recrystallized.

167. The tantalum sputtering component of claim 158, wherein about 80% or more of said tantalum sputtering component is recrystallized.

168. The tantalum sputtering component of claim 158, wherein said grain size is about 100 microns or less.

169. The tantalum sputtering component of claim 158, wherein said grain size is about 50 microns or less.

170. The tantalum sputtering component of claim 158, wherein said average grain size is from about 25 to about 150 microns.

171. A tantalum sputtering component comprising a mixed (111)-type texture throughout its thickness which is substantially void of (100) ~~textural~~ bands.

172. The tantalum sputtering component of claim 171, wherein said tantalum sputtering component has an average grain size of about 150 microns or less.

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173. The tantalum sputtering component of claim 171, wherein said average grain size is about 100 microns or less.

174. The tantalum sputtering component of claim 171, wherein said tantalum sputtering component is a sputtering target.

175. The tantalum sputtering component of claim 171, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.50% tantalum.

176. The tantalum sputtering component of claim 171, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.99% tantalum.

177. The tantalum sputtering component of claim 171, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.995% tantalum.

178. The tantalum sputtering component of claim 171, wherein said tantalum sputtering component comprises tantalum having a purity of at least 99.999% tantalum.

179. The tantalum sputtering component of claim 171, wherein said tantalum sputtering component is fully recrystallized.

180. The tantalum sputtering component of claim 171, wherein said tantalum sputtering component is at least partially recrystallized.

181. The tantalum sputtering component of claim 171, wherein about 98% or more of said tantalum sputtering component is recrystallized.

182. The tantalum sputtering component of claim 171, wherein about 80% or more of said tantalum sputtering component is recrystallized.

183. The tantalum sputtering component of claim 171, wherein said average grain size is about 50 microns or less.

184. The tantalum sputtering component of claim 120, further comprising a backing plate.

185. The tantalum sputtering component of claim 127, further comprising a backing plate.

186. The tantalum sputtering component of claim 150, further comprising a backing plate.

187. The tantalum sputtering component of claim 158, further comprising a backing plate.

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188. The tantalum sputtering component of claim 171, further comprising a backing plate. --

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